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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,695	07/15/2003	Keiichi Furuya	240088US2	5870
22850	7590	06/30/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CRANE, SARA W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/618,695

Applicant(s)

FURUYA ET AL. ☒

Examiner

Sara W. Crane

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 2002-9163 in view of Hayashi.

Figure 4 of the Japanese reference shows MOS capacitor 12, 16, 18 underlying stacked poly capacitor 16, 20, 24. Hayashi shows in the cover figure to connect the top electrode of a double stacked capacitor to the bottom electrode, to increase capacitance. It would have been obvious to connect the top electrode 22 of the double poly/MOS capacitor to the bottom electrode 12 for the same reason. Metal interconnects would have been obvious to obtain increased conductivity. With respect to claim 3, it would have been obvious to stack multiple capacitor layers on top of the double poly/MOS capacitor, with plates interconnected as taught by Hayashi, in order to increase capacitance. Metal plates would have been obvious to obtain increased conductivity.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bikulcuis in view of Vathulya et al.

The Bikulcuis cover figure shows a capacitor that has a spiral-shaped first electrode, a spiral-shaped second electrode formed parallel to the first electrode, and a dielectric layer in between. Column 4, line 35 of Vathulye et al. teaches polysilicon as a material for capacitor electrode layers. It would have been obvious to make the Bikulcuis capacitor electrode layers of polysilicon as taught by Vathulye et al., in order to obtain the refractory properties of polysilicon. With respect to claim 6, it would have been obvious to use high dielectric constant materials for capacitor dielectric, in order to increase the capacitance.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 5-6 above, and further in view of Hayashi.

It would have been obvious to stack multiple capacitors, with alternating plates interconnected as shown by Hayashi, in order to increase the capacitance.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 5-9 above, and further in view of Japan 2002-9163.

It would have been obvious to include a MOS capacitor under a capacitor stack, as taught by Japan 2002-9163, with electrodes interconnected as taught by Hayashi, in order to obtain increased capacitance.

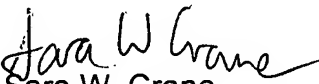
Allowable Subject Matter

Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Multiple substrate diffusion capacitor plates with interleaved connections are not shown in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (571) 272-1652.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist, whose telephone number is (571) 272-1562.


Sara W. Crane
Primary Examiner
Art Unit 2811